

LDLWIYHTQGYFPDWQNYTPGPGVRYPLTFGWICYKLVPVEPDKVEEANKGENTSLLH
PVSLHGMDDPEREVLEWRFD SRLAFHHVARELHPEYFKNC;

(b) reagents for detecting the hybrids; and

(c) a biological reference sample lacking nucleic acid recognized by said
nucleic acid probe composition.

46. (NEW) The kit according to claim 45, wherein said probe is labeled with a
label selected from the group consisting of a radioactive label, an enzymatic label, and a
fluorescent label. --

REMARKS

Reconsideration of this application is respectfully requested.

Claims 11-18 have been canceled. Claims 35-46 are new and are derived from
canceled claims 11-18. New claims 35-46 are fully supported by the specification, for
example at page 1, lines 7-13; page 12, line 29, through page 15, line 14; page 16, lines
10-13; page 17, lines 3-11; and Figures 2, 3, 8, 9, 11, 12, 23, 25, and 26. No new
matter enters by amendment.

As requested by the Examiner, applicants submit herewith a copy of the original
claims which were involved in Interference No. 102,822.

Claims 17 and 18 were provisionally rejected under the judicially created doctrine
of obviousness-type double patenting as being unpatentable over claim 13 of copending
Application No. 08/308,218 in view of White et al. (U.S. Patent No. 4,677,054). Claims
15 and 16 were provisionally rejected under the judicially created doctrine of
obviousness-type double patenting as being unpatentable over claims 11-22 of
copending Application No. 08/202,239 in view of White et al. (U.S. Patent No.

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4,677,054). Since these are provisional rejections, applicants request that the rejections be held in abeyance until allowance of the pending claims.

Claims 11, 13, 15, and 17 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Chang et al. (U.S. Patent No. 6,001,977). The Examiner alleges that Chang discloses *in vitro* diagnostic methods for detecting the presence or absence of HIV-1 virus.

Applicants' new claims 35-46 recite methods and kits using probes comprising HIV-1 ORF-1, ORF-4, and ORF-R sequences. The proteins encoded by ORF-1, ORF-4, and ORF-R are now known as the Vpr, Vpu, and Nef proteins of HIV-1.

In the attached Tables 1, 3, and 5, applicants provide a comparison of DNA sequences from ORF-R (Nef), ORF-1 (Vpr), and ORF-4 (Vpu) from LAV with the sequences of these regions from the Chang patent (BH10, BH5, and BH8). The sequences of Chang contain stop codons in the ORF-1 and ORF-R reading frames. In Table 1 and Table 3, applicants have highlighted the in-frame stop codons present in the ORF-R (Nef) and ORF-1 (Vpr) reading frames of the BH10 and BH8 sequences of Chang. As a result of these stop codons, the sequences of Chang do not encode full-length HIV-1 Vpr and Nef proteins as claimed by applicants. Therefore, Chang cannot anticipate the methods and kits of new claims 35-46. Accordingly, applicants respectfully request withdrawal of the rejection.

In the attached Tables 2, 4, and 6, applicants have also provided a comparison of DNA sequences from ORF-R (Nef), ORF-1 (Vpr), and ORF-4 (Vpu) from LAV with the sequences of these regions from ARV in U.S. Patent No. 5,156,949 to Luciw et al. The sequence of Luciw contains a stop codon in the ORF-4 (Vpu) reading frame. In

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Table 6, applicants have highlighted the in-frame stop codon present in the ORF-4 (Vpu) reading frame of the ARV sequence of Luciw. As a result of this stop codon, the sequence of Luciw does not encode full-length HIV-1 Vpu protein as claimed by applicants. Accordingly, Luciw also cannot anticipate the methods and kits of new claims 35-46.

Claims 11-18 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over by Chang et al. (U.S. Patent No. 6,001,977) in view of White et al. (U.S. Patent No. 4,677,054). The Examiner alleges that it would have been *prima facie* obvious to combine the method of White with the method of Chang.

Applicants' new claims 35-46 recite methods and kits using probes comprising HIV-1 ORF-1 (Vpr), ORF-4 (Vpu), and ORF-R (Nef) sequences. The sequences of Chang do not encode full-length HIV-1 Vpr and Nef proteins as claimed by applicants. Chang did not even identify open reading frames encoding these proteins. White does not remedy these deficiencies. Consequently, Chang and White cannot make applicants' claimed invention obvious. Accordingly, applicants respectfully request withdrawal of the rejection.

Furthermore, the sequence of Luciw does not encode full-length HIV-1 Vpu protein as claimed by applicants. Luciw did not even identify an open reading frame encoding this protein. Consequently, Luciw also cannot make applicants' claimed invention obvious.

Applicants respectfully submit that this application is now in condition for allowance. In the event that the Examiner disagrees, he is invited to call the

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undersigned to discuss any outstanding issues remaining in this application in order to expedite prosecution.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: September 3, 2002

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TABLE 1(Nef/ORF-R)

gacagggcttggaaggattttgctataagatgggtggcaagtgggtcaaaaagtagtgtggttgatggcctactgta	LAV
gacagggcttggaaggattttgctataagatgggtggcaagtgggtcaaaaagtagtgtggttgatggcctgctgta	BH10
gacagggcttggaaggattttgctataagatgggtggcaagtgggtcaaaaagtagtgtggttgatggcctgctgta	BH8
agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagcatctcgagacctggaacacatggagca	LAV
agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagcatctcgagacctagaaaaacatggagca	BH10
agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagcatctcgagacctagaaaaacatggagca	BH8
atcacaagtagcaatacagcagctaccaatgctgcttgtgcctggctagaagcacaagaggaggagggtgggtttt	LAV
atcacaagtagcaatacagcagctaccaatgctgattgtgcctggctagaagcacaagaggaggagggtgggtttt	BH10
atcacaagtagcaatacagcagctaccaatgctgattgtgcctggctagaagcacaagaggaggagggtgggtttt	BH8
ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccactttttaaaagaaaag	LAV
ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccactttttaaaagaaaag	BH10
ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccactttttaaaagaaaag	BH8
gggggactggaagggctaattcactccaacgaagacaagatatccttgatctgtggatctaccacacacaaggctac	LAV
gggggactggaagggctaattcactccaacgaagacaagatatccttgatctgtggatctaccacacacaaggctac	BH10
gggggactggaagggctaattcactccaacgaagacaagatatccttgatctgtggatctaccacacacaaggctac	BH8
ttccctgattggcagaactacacaccagggccaggggtcagatatccactgaccttttgatgggtgctacaagctagta	LAV
ttccctgatttagcagaactacacaccagggccaggggtcagatatccactgaccttttgatgggtgctacaagctagta	BH10
ttccctgattggcagaactacacaccagggccaggggtcagatatccactgaccttttgatgggtgctacaagctagta	BH8
ccagttgagccagataaggtagaagaggccaataaaggagagagaacaccagcttggttacacctgtgagcctgcatgga	LAV
ccagttgagccagagaaggtagaagaagccaacaaaggagagagaacaccagcttggttacacctgtgagcctgcatgga	BH10
ccagttgagccagagaagtaagaagaagccaataaaggagagagaacaccagcttggttacacctgtgagcctgcatgga	BH8
atggatgaccttgagagagaagtgttagagtggaggtttgacagccgcctagcatttcacacgtggcccgagagctg	LAV
atggatgaccttgagagagaagtgttagagtggaggtttgacagccgcctagcatttcacacgtggcccgagagctg	BH10
atggatgaccttgagagagaagtgttagagtggaggtttgacagccgcctagcatttcacacgtggcccgagagctg	BH8
catccggagtacttcaagaactgctga	LAV
catccggagtacttcaagaactgctga	BH10
catccggagtacttcaagaactgctga	BH8

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TABLE 2 (Nef/ORF-R)

gacagggccttgaaaaggattttgctataagatgggtggcaagtgggtcaaaaagtagtggttgatggcctactgta	LAV
gacagggccttgaaaaggcctttgctataagatgggtggcaagtgggtcaaacgtagtatgggtgatgggtctgctata	ARV
agggaaagaatgagacgagctgagccagcagcaga	tggggtgggagcagcatctcgagacctggaa LAV
agggaaagaatgagacgagctgagccacgagctgagccagcagcagatggggtgggagcagtatctcgagacctggaa	ARV
aaacatggagcaatcacaagtagcaatacagcagctaccaatgctgcttgctgctaggctagaagcacaagaggaggag	LAV
aaacatggagcaatcacaagtagcaatacagcagctactaatgctgattgtgctaggctagaagcacaagaggaggaa	ARV
gaggtgggttttccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccacttt	LAV
gaggtgggttttccagtcagacctcaggtacctttaagaccaatgacttacaaggcagctttagatattagccacttt	ARV
ttaaagaaaaaggggggactggaagggttaattcactcccaacgaagacaagatatccttgatctgtggatctaccac	LAV
ttaaagaaaaaggggggactggaagggttaatttgggtcccaagaagacaagagatccttgatctgtggatctaccac	ARV
acacaaggctacttccctgattggcagaactacacaccagggccaggggtcagatatccactgacctttggatgggtgc	LAV
acacaaggctacttccctgattggcagaattacacaccagggccagggatcagatatccactgacctttggatgggtgc	ARV
tacaagctagtaccagttgagccagataaggtagaagaggccaataaaggagagaacaccagcttggttacacctgtg	LAV
ttcaagctagtaccagttgagccagagaaggtagaagaggccaatgaaggagagaacaacagcttggttacacctatg	ARV
agcctgcatggaatggatgacctgagagagaagtgttagagtggaggtttgacagccgctagcatttcacacgtg	LAV
agcctgcatggatggaggacgagagaaagaagtgttagtgtggaggtttgacagcaaactagcatttcacacatg	ARV
gcccagagctgcatccggagtacttcaagaactgctga	LAV
gcccagagctgcatccggagtactacaaagactgctga	ARV

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TABLE 3 (Vpr/ORF-1)

atggaacaagccccagaagaccaagggccacagaggagccacacaatgaatggacactagagcttttagaggagctt	LAV
atggaacaagccccagaagaccaagggccacagaggagccacacaatgaatggacactagagcttttagaggagctt	BH10
atggaacaagccccagaagaccaagggccacagaggagccacacaatgaatggacactagagcttttagaggagctt	BH5
aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat	LAV
aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat	BH10
aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat	BH5
acttgggcaggagtgggaagccataataagaattctgcaacaactgctgtttatccattt cagaattgggtgtcgaca	LAV
acttgggcaggagtgggaagccataataagaattctgcaacaactgctgtttatccattt t cagaattgggtgtcgaca	BH10
acttgggcaggagtgggaagccataataagaattctgcaacaactgctgtttatccattt t cagaattgggtgtcgaca	BH5
tagcagaataggcggttactcaacagaggagagcaagaaatggagccagtagatcctag	LAV
tag cagaataggcggttactcgacagaggagagcaagaaatggagccagtagatcctag	BH10
tag cagaataggcggttactcaacagaggagagcaagaaatggagccagtagatcctag	BH5

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TABLE 4 (Vpr/ORF-1)

atggaacaagccccagaagaccaagggccacagaggagccacacaatgaatggacactagagcttttagaggagctt	LAV
atggaacaagccccagaagaccaagggccacagaggagccatacaatgaatggacactagagcttttagaggagctt	ARV
aagaatgaagctgttagacattttctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat	LAV
aagagagaagctgttagacattttctaggccatggctccatagcttaggacaatatatctatgaaacttatggggat	ARV
acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccatttcagaattgggtgtcgacat	LAV
acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccatttcagaattgggtgtcaacat	ARV
agcagaataggcggttactcaacagaggagagcaagaa	atggagccagtagatcctag LAV
agcagaataggcattattcaacagaggagagcaagaagaatggagccagtagatcctaa	ARV

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TABLE 5 (Vpu/ORF-4)

gtagtacatgtaatgcaacctatacaaatag	caatagcagcattagtagtagcaataataatagcaatagttgtg	LAV
gtagtacatgtaatgcaacctatacaaatag	caatagtagcattagtagtagcaataataatagcaatagttgtg	BH10
gtagtacatgta acg caacctataccaatagtaacaatagtagccttagcagtagcaataataatagcaatagttgtg		BH8
tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa		LAV
tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa		BH10
tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa		BH8
agagcagaagacagtggaatgagagtgaaggagaaatatacagcacttgtggagatgggggtggaaatggggcaccat		LAV
agagcagaagacagtggaatgagagtgaaggagaaatatacagcacttgtggagatgggggtggagatggggcaccat		BH10
agagcagaagacagtggaatgagagtgaaggagaaatatacagcacttgtggagatgggggtggagatggggcaccat		BH8
gctccttgggatattgatgatctgtag	LAV	
gctccttgggatgttgatgatctgtag	BH10	
gctccttgggatgttgatgatctgtag	BH8	

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